CASE HH/3-22999/A/PCT

**CERTIFICATE OF MAILING**

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Anna R. Maddalena (Anna R. Maddalena) 4/30/09

Type or print name | Signature | Date

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE PCT NATIONAL STAGE APPLICATION OF
VÉRONIQUE HALL-GOULLE ET AL
INTERNATIONAL APPLICATION NO. **PCT/EP 04/053332**
FILED: **December 8, 2004**
FOR: REACTIVE POLYSACCHARIDE DERIVATIVES, THEIR PREPARATION AND THEIR USE
U.S. APPLICATION NO: **10/583,012**
35 USC 371 DATE: June 15, 2006

Group Art Unit: **1623**
Examiner: **Layla D. Bland**
**Confirmation No. 6112**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

## APPEAL BRIEF

This Appeal is from the Final Rejection of claims 1-5, 7, 10 and 16, dated October 8, 2008.

The Notice of Appeal was timely mailed by first class mail with a Certificate of Mailing on March 4, 2009, together with a petition for a two month extension of time. The Notice of Appeal was filed in the USPTO on March 9, 2009, making this Brief due May 9, 2009. This Brief is timely filed.

The Commissioner is hereby authorized to charge any necessary fee or credit any overpayment to Deposit Account No. 03-1935.

**(1) Real Party of Interest**

The real party of interest, by virtue of an assignment recorded in the U.S. Patent and Trademark Office on June 15, 2006, reel/frame 017995/0826, is:

Ciba Specialty Chemicals Corp.
P.O. Box 2005
540 White Plains Road
Tarrytown, New York 10591

**(2) Related Appeals and Interferences**

To the knowledge of the undersigned, there are no related appeals or interferences.

**(3) Status of the Claims**

Claims 1-5, 7 and 9-16 are pending.

Claims 9 and 11-15 are withdrawn.

Claims 1-5, 7, 10 and 16 are rejected and are presented for appeal.

Claims 1-5, 7 and 9-16 are present in an attached appendix with status identifiers.

**(4) Status of the Amendments**

The Amendment After Final filed January 12, 2009, in which claim 7 was amended, brings up to date the status of the claims. The Advisory Action dated January 29, 2009 stated that for the purposes of appeal, the proposed amendment would be entered.

**(5) Summary of the Claimed Subject Matter**

The present claims are aimed at reactive polysaccharide compounds of formula (1a) or (1b) and at intermediate compounds of formula (7) employed in the preparation of compounds of formula (1a) or (1b). The reactive polysaccharides are useful as finishing agents in the textile industry, paragraph bridging pages 3 and 4. The present polysaccharides are in particular cyclodextrins, page 1, second paragraph. The present polysaccharide compounds of formula (1a) or (1b) are reactive by virtue of substituents $Z_1$ or $Z_2$, last paragraph, page 4.

**Claim 1** is aimed at reactive polysaccharide compounds of formula (1a) or (1b). Claim 1 finds support on page 4, last paragraph. Claim 1 also finds support on page 5, first paragraph for the definitions of $Q_1$, $Q_2$ and $Q_3$. The definitions of $Z_1$ and $Z_2$ are found in the paragraph bridging pages 10 to 13.

**Claim 2**, dependent on claim 1, requires certain definitions of $Q_1$, $Q_2$ and $Q_3$. Support is found on page 6, fourth paragraph.

**Claim 3**, dependent on claim 1, requires a certain definition of A. Support is found on page 6, third paragraph.

**Claim 4**, dependent on claim 1, requires certain definitions of bridge member B. Support is found on page 6, sixth paragraph.

**Claim 5**, dependent on claim 1, requires certain definitions of bridge member B. Support is found on page 8, third full paragraph.

**Claim 7**, dependent on claim 1, requires certain definitions of reactive group $Z_1$. Support is found in the paragraph bridging pages 16 and 17. The substituent "G" was inserted in the Amendment filed January 12, 2009.

**Claim 10**, dependent on claim 1, requires that n is 1 or 2. Support is found on page 21, last paragraph.

Claim **16**, dependent on claim 1, is aimed at polysaccharide compounds of formula (7). The compounds of formula (7) are precursors in the preparation of compounds of formula (1a) or (1b). Support is found on page 20, line 5. Support is also found on page 4, last paragraph for the definition of A, B, PS, n and m and on page 5, first paragraph for the definitions of $Q_1$.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The grounds for rejection for review are:

Claims 1-5, 7, 10 and 16 are rejected under 35 USC 103(a) as being unpatentable over Reuscher, et al., U.S. Pat. No. 5,728,823.

**(7) Argument**

Claims 1-5, 7, 10 and 16 are rejected under 35 USC 103(a) as being unpatentable over Reuscher, et al., U.S. Pat. No. 5,728,823.

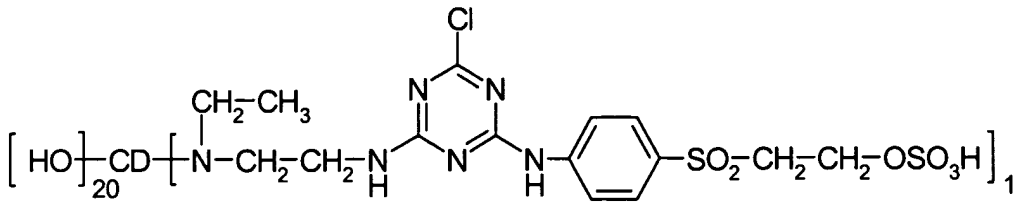
Appellants respectfully rebut these rejections.

Present claims 1-3, 7 and 10 are argued together as one group.

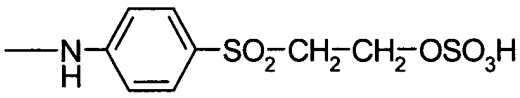
Claims 4 and 5 are argued together as a separate group.

Claim 16 is argued separately.

Appellants have elected present compound 116a on page 38 of the disclosure:



The elected specie is of formula (1a). Present $Q_1$ is ethyl, spacer B is ethylene, A is –NH- and $Z_1$ is the triazine moiety. CD is cyclodextrin (polysaccharide). The triazine is of formula (2d) where $T_1$ is halogen and $X_1$ is of formula (3c):



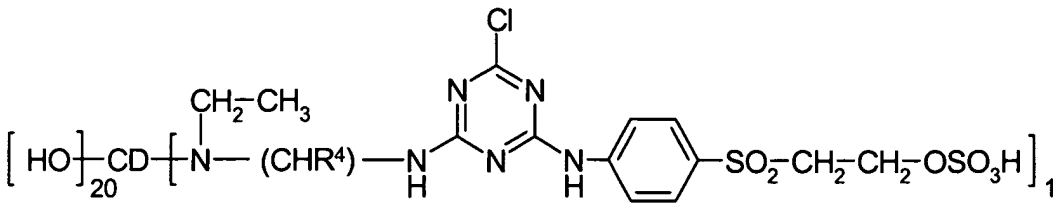
The elected specie reads on claims 1-5, 7 and 10.

The elected invention is where A is N and $Z_1$ is a group of the heterocyclic series. The election was filed January 22, 2008.

Reuscher contains two very generic descriptions of his compounds: In the paragraph bridging columns 1 and 2 and in the paragraph spanning columns 2 to 4.

In the first generic description, $R^2$ is a nitrogen containing heterocycle which is either linked directly or via a spacer by means of an ether, thioether, ester or amine, where the spacer is an alkyl or hydroxyalkyl having 1-12 carbon atoms, which is bonded to the anhydroglucose via an ether, thioether, ester or amine and the nitrogen containing heterocycle includes at least one halogen or ammonium substituent. Hence, Reuscher very generically discloses the present elected specie and the compounds of claims 4 and 5 in this first generic description.

Reuscher further generically describes his cyclodextrins in col. 2, line 30 through col. 4, line 19. The closest generically disclosed compound of Reuscher to the present elected specie is when R is $R^2$ where $R^2$ is $-R^3{}_m$-$(CHR^4)$-$R^5$-$R^6$. $R^3$ may be -$NR^7$ where $R^7$ is alkyl. $R^5$ may be –NH-. $R^6$ may be a triazine moiety substituted by Cl and by $-NR^{10}R^{11}$ where $R^{11}$ may be -Ph–$SO_2CH_2CH2OSO_3H$. In this case, the close compound of Reuscher is:



There is no overlap of the generically defined compounds of Reuscher with the present elected specie, as -$CHR^4$- is non-equivalent to present ethylene. Present claim 4 requires B to be a $C_2$-$C_{12}$alkylene. Present claim 5 requires B to be a 1,2-ethylene, 1,3-propylene or 1,2-propylene. Thus, there is no overlap of the further generically defined compounds of Reuscher with those of present claims 4 and 5.

Regarding present claims 1-3, 7 and 10 (and 4 and 5):

While Reuscher generically describes a number of linkage groups to the polysaccharide including amino, the processes described in this reference (col. 4, line 32 onwards) are silent about amino-derivatives. Reuscher is non-enabling for the generic disclosure where his $R^3$ is NH or $NR^7$. Reuscher describes reacting cyclodextrin or cyclodextrin derivatives with suitable nitrogen containing heterocycles, col. 4, lines 33-41. Suitable heterocycles are nitrogen containing heterocycles having at least two electrophilic centers, col. 5, lines 34-36. Suitable cyclodextrin derivatives are cyclodextrin ethers or mixed ethers, cyclodextrin esters or mixed esters or mixed ether/ester derivatives, col. 4, lines 62-66. Cyclodextrin amine derivatives are not mentioned.

Other than the very generic disclosure of Reuscher on columns 1-4, amino derivatives of cyclodextrins are not known from the literature. Their preparation is not mentioned or suggested by Reuscher and their reaction with the heterocyclic component has not been described in any way.

Despite the broad generic formula given by Reuscher, he not only fails to exemplify the present compounds, but he fails to provide any motivation to the skilled person to employ amino derivatized polysaccharides as a starting material for the reaction with heterocycles such as cyanuric chloride, and is far from giving any hint on the preparation of such intermediates. Reuscher does not fairly suggest the present compounds and does not enable the skilled person to prepare said compounds.

Appellants submit that the disclosure of Reuscher is very broad and does not fairly suggest the present elected specie and the compounds of present claims 4 and 5.

Thus, Appellants submit that present claims 4 and 5 are not obvious over the disclosure of Reuscher.

Appellants further submit that the disclosure of Reuscher does not fairly suggest the compounds of claims 1-3, 7 and 10.

Appellants therefore submit that the compounds of claims 1-3, 7 and 10 cannot be obvious over the disclosure of Reuscher.

Appellants submit that the present polysaccharide precursors of formula (7) of claim 16 are not at all disclosed in Reuscher.

Appellants submit that the compounds of present claim 16 cannot be obvious over the disclosure of Reuscher.

For these reasons, Appellants submit that the 35 USC 103(a) rejections of claims 1-5, 7, 10 and 16 are addressed and are successfully rebutted.

Appellants submit that the claim rejections are in error and respectfully request that they be reversed.

Respectfully submitted,

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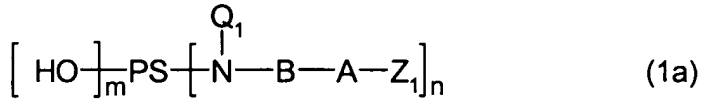
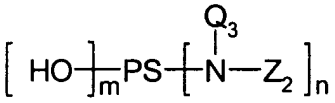
Attachments: Claims Appendix
Evidence Appendix
Related Proceedings Appendix
Transmittal Letter

**(8) Claims Appendix** Claims on Appeal 1-5, 7, 10 and 16

**1. (previously presented)** A reactive polysaccharide derivative of formula (1a) or (1b)



(1a)



(1b)

in which

A is -O-, -S- or  ,

$Q_1$ is hydrogen, the radical —B—A—$Z_1$ , $C_1$-$C_{10}$aryl which is unsubstituted or substituted or $C_1$-$C_{12}$alkyl which may be interrupted by oxygen and is unsubstituted or substituted by amino; $C_2$-$C_4$alkanoylamino; $C_1$-$C_4$alkoxy; hydroxy; sulfo; sulfato; carboxy; cyano; carbamoyl; sulfamoyl; β-sulfatoethylsulfonyl; β-chloroethylsulfonyl; or $C_1$-$C_{10}$aryl which in turn is unsubstituted or substituted,

$Q_2$ and $Q_3$ are each independently of the other hydrogen, $C_1$-$C_{10}$aryl which is unsubstituted or substituted or $C_1$-$C_{12}$alkyl which may be interrupted by oxygen and is unsubstituted or substituted by $C_2$-$C_4$alkanoylamino; $C_1$-$C_4$alkoxy; hydroxy; sulfo; sulfato; carboxy; cyano; carbamoyl; sulfamoyl; β-sulfatoethylsulfonyl; β-chloroethylsulfonyl; or $C_1$-$C_{10}$aryl which in turn is unsubstituted or substituted, any substituent of $C_1$-$C_{10}$aryl, if present, is selected from $C_2$-$C_4$alkanoylamino; $C_1$-$C_4$alkyl; $C_1$-$C_4$alkoxy; halogen; hydroxy; sulfo; nitro; carboxy; cyano; carbamoyl and sulfamoyl,

B is an aliphatic or aromatic bridge member,

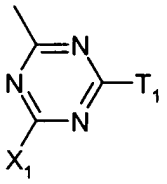
$Z_1$ and $Z_2$ are each independently of the other a reactive radical, where

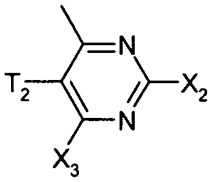
$Z_1$ is a radical of formula (2a), (2b), (2c), (2d) or (2e)

$$-CO-(CH_2)_l-SO_2-Y \qquad (2a)$$

$$-CO-CH(Hal)-CH_2-Hal \qquad (2b)$$

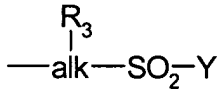
$$-CO-C(Hal)=CH_2 \qquad (2c)$$

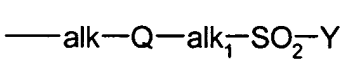

(2d)


(2e)

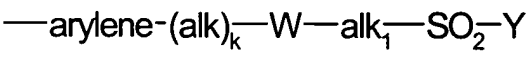
and

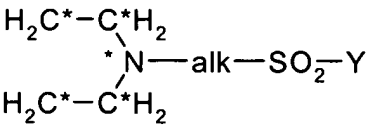
$Z_2$ is a radical of formula (4a), (4b), (4c), (4d), (4e) or (4f)

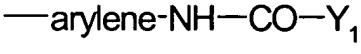

(4a)


(4b)


(4c)


(4d)

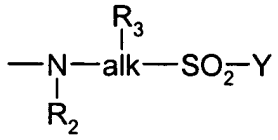

(4e)


(4f)

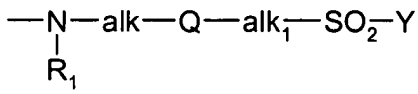
in which

Hal is chlorine or bromine,

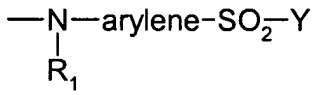
$X_1$ is halogen, pyridinium, 3-carboxypyridin-1-yl or 3-carbamoylpyridin-1-yl, or a reactive radical of formula (3a), (3b), (3c), (3d), (3e) or (3f)



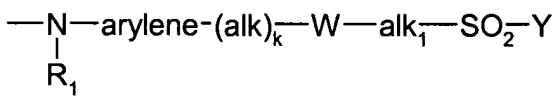
(3a)



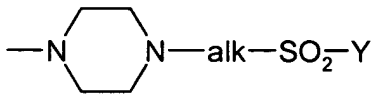
(3b)



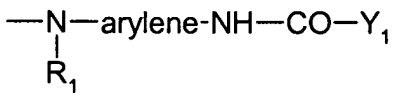
(3c)



(3d)



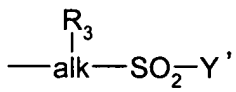
(3e)



(3f)

in which

$R_1$ is hydrogen or $C_1$-$C_4$alkyl,

$R_2$ is hydrogen, $C_1$-$C_4$alkyl unsubstituted or substituted by hydroxy, sulfo, sulfato, carboxy or by cyano, or a radical  ,

$R_3$ is hydrogen, hydroxy, sulfo, sulfato, carboxy, cyano, halogen, $C_1$-$C_4$alkoxycarbonyl, $C_1$-$C_4$alkanoyloxy, carbamoyl or a group -$SO_2$-Y,

alk and $alk_1$ are each independently of the other linear or branched $C_1$-$C_6$alkylene,

arylene is a phenylene or naphthylene radical unsubstituted or substituted by sulfo, carboxy, $C_1$-$C_4$alkyl, $C_1$-$C_4$alkoxy or by halogen,

Q is a radical -O- or -$NR_1$- wherein $R_1$ is as defined above,

W is a group -$SO_2$-$NR_2$-, -$CONR_2$- or -$NR_2CO$- wherein $R_2$ is as defined above,

Y is vinyl or a radical -$CH_2$-$CH_2$-U and U is a group removable under alkaline conditions selected from -Cl, -Br, -F, -$OSO_3H$, -$SSO_3H$, -OCO-$CH_3$, -$OPO_3H_2$, -OCO-$C_6H_5$, -$OSO_2$-$C_1$-$C_4$alkyl and -$OSO_2$-N($C_1$-$C_4$alkyl)$_2$,

$Y_1$ is a group -CH(Hal)-$CH_2$-Hal or -C(Hal)=$CH_2$ and Hal is chlorine or bromine, and

l is an integer from 1 to 6 and k is a number 0 or 1, and

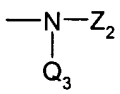
$X_2$ is halogen or $C_1$-$C_4$alkylsulfonyl,

$X_3$ is halogen or $C_1$-$C_4$alkyl,

$T_1$ has independently the same definitions as $X_1$ above, or is a non-reactive substituent selected from $C_1$-$C_4$alkoxy; $C_1$-$C_4$alkylthio; hydroxy; amino; N-mono- or N,N-di-$C_1$-$C_4$alkylamino unsubstituted or substituted in the alkyl moiety by hydroxy or sulfato or sulfo; morpholino; or phenylamino or N-$C_1$-$C_4$alkyl-N-phenylamino (wherein the alkyl is unsubstituted or substituted by hydroxy, sulfo or by sulfato) each unsubstituted or substituted in the phenyl ring by sulfo, carboxy, acetylamino, chlorine, methyl or by methoxy; or naphthylamino unsubstituted or substituted by 1 to 3 sulfo groups;, and

$T_2$ is hydrogen, cyano or halogen,

k is a number 0 or 1, and

the atoms indicated with an asterisk in the reactive radical of formula (4e) together with the radical of formula  form a piperazine ring,

PS is a polysaccharide radical,

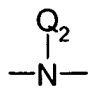
m is 0, 1 or an integer greater than 1,

n is 1 or an integer greater than 1, and

the sum of n+m corresponds to the original number of hydroxy groups in the polysaccharide molecule.

**2. (previously presented)** A reactive polysaccharide derivative according to claim **1**, wherein $Q_1$ is hydrogen, benzyl or $C_1$-$C_4$alkyl which is unsubstituted or substituted by amino, or the radical —B—A—$Z_1$ , and $Q_2$ and $Q_3$ are each independently of the other hydrogen, benzyl or $C_1$-$C_4$alkyl.

**3. (previously presented)** A reactive polysaccharide derivative according to claim **1**, wherein

A is  .

**4. (previously presented)** A reactive polysaccharide derivative according to claim **1**, wherein B is a $C_2$-$C_{12}$alkylene radical, which is unsubstituted or substituted by hydroxy, sulfo, sulfato, cyano or carboxy, and which may be interrupted by 1, 2 or 3 members from the group $-N(R_{1a})-$ and -O-, in which $R_{1a}$ is hydrogen or $C_1$-$C_4$alkyl, or $R_{1a}$ has the meaning indicated for $Z_1$ according to claim **1**.

**5. (previously presented)** A reactive polysaccharide derivative according to claim **1**, wherein B is 1,2-ethylene, 1,3-propylene or 1,2-propylene.

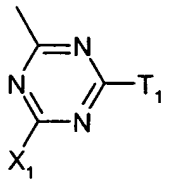
**6. (canceled)**

**7. (previously presented)** A reactive polysaccharide derivative according to claim **1**, wherein $Z_1$ is a radical of formula (2a), (2b), (2c) or (2d)

$-CO-(CH_2)_l-SO_2-Y$ (2a)

$-CO-CH(Hal)-CH_2-Hal$ (2b)

$-CO-C(Hal)=CH_2$ (2c)



(2d)

in which

Y is vinyl, β-chloroethyl or β-sulfatoethyl,

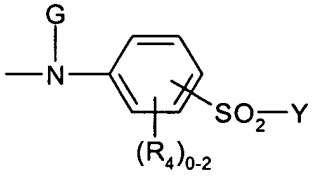
Hal is bromine, l is a number 2 or 3,

$X_1$ is halogen,

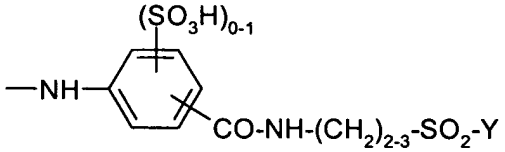
$T_1$ is $C_1$-$C_4$alkoxy, $C_1$-$C_4$alkylthio, hydroxy, amino, N-mono- or N,N-di-$C_1$-$C_4$alkylamino unsubstituted or substituted in the alkyl moiety by hydroxy, sulfato or by sulfo, morpholino, or phenylamino or N-$C_1$-$C_4$alkyl-N-phenylamino each unsubstituted or substituted in the phenyl ring by sulfo, carboxy, acetylamino, chlorine, methyl or by methoxy and wherein the alkyl is unsubstituted or substituted by hydroxy, sulfo or by sulfato, or naphthylamino unsubstituted or substituted by from 1 to 3 sulfo groups, or is a fibre-reactive radical of formula (3a'), (3b'), (3c'), (3d') or (3f')

$$-NH-(CH_2)_{2-3}-SO_2Y \qquad (3a')$$

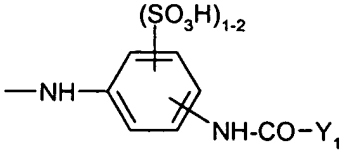
$$-NH-(CH_2)_{2-3}-O-(CH_2)_{2-3}-SO_2Y \qquad (3b')$$



(3c')



(3d')



(3f')

in which

G is H, Me or Et,

$(R_4)_{0-2}$ is 0 to 2 identical or different substituents from the group of methyl, methoxy and sulfo,

Y is as defined above, and

$Y_1$ is a group $-CH(Br)-CH_2-Br$ or $-C(Br)=CH_2$.

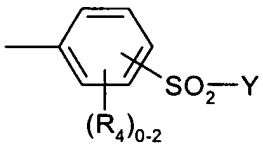
**8. (canceled)**

**9. (withdrawn)** A reactive polysaccharide derivative according to claim **1**, wherein

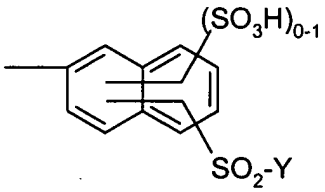
$Z_2$ is a radical of formula (4a'), (4b'), (4c'), (4c*), (4d'), (4d*) or (4f')

$-(CH_2)_{2-3}-SO_2Y$ (4a'),

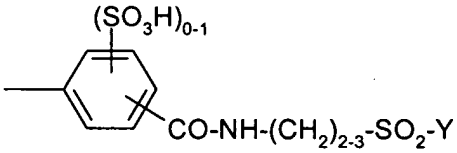
$-(CH_2)_{2-3}-O-(CH_2)_{2-3}-SO_2Y$ (4b'),



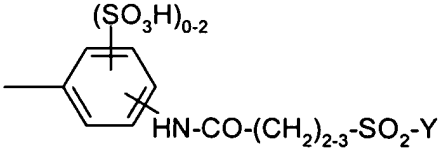

(4c'),



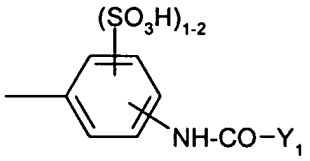

(4c*),




(4d'),




(4d*) or




(4f'),

in which

$(R_4)_{0-2}$ is 0 to 2 identical or different substituents from the group of methyl, methoxy and sulfo,

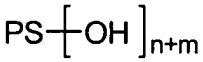
Y is vinyl, β-chloroethyl or β-sulfatoethyl, and

$Y_1$ is a group $-CH(Br)-CH_2-Br$ or $-C(Br)=CH_2$.

**10. (previously presented)** A reactive polysaccharide derivative according to claim **1**, wherein n is 1 or 2.

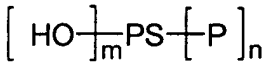
**11. (withdrawn)** A process for the preparation of a reactive polysaccharide derivative of formula (1a) or (1b) according to claim **1**, which process comprises the steps of

(i) introducing at least one leaving group into the polysaccharide molecule by reaction of a polysaccharide compound of the formula



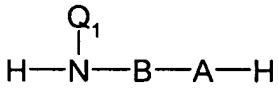

(4)

with at least n molar equivalents of a leaving group precursor P* to yield the compound of formula



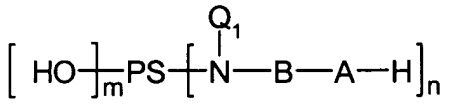

(5);

(ii) reacting the compound of formula (5) with at least n molar equivalents of the compound of the formula



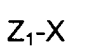

(6)

to yield the compound of formula



(7),

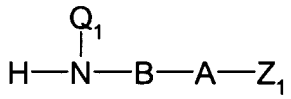
and allowing the compound of the formula (7) to react with at least n molar equivalents of the compound of the formula



(8),

or

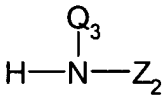
reacting the compound of formula (5) with at least n molar equivalents of the compound of the formula



(9),

or

reacting the compound of formula (5) with at least n molar equivalents of the compound of the formula



(10),

wherein

PS, $Q_1$, $Q_3$, A, B, $Z_1$, $Z_2$, m and n are as defined in claim **1**, and X and P are each a leaving group.

**12. (withdrawn)** A process according to claim **11**, wherein

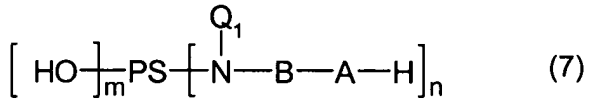
the compound of formula (4) corresponds to cyclodextrin or a cyclodextrin derivative.

**13. (withdrawn)** A process for the preparation of compounds or substrates modified with polysaccharides comprising reacting the said compounds or substrates with a polysaccharide derivative according to claim **1**.

**14. (withdrawn)** A process for finishing textile fiber materials containing hydroxy groups or containing nitrogen, which comprises finishing said materials with a polysaccharide derivative according to claim **1**.

**15. (withdrawn)** A process according to claim **14**, wherein the textile fiber materials are cellulose containing fiber materials.

**16. (previously presented)** A compound of formula (7)



(7)

wherein PS, $Q_1$, A, B, m and n are as defined in claim **1**,
with the exception of β-cyclodextrin which is substituted in the 6-position of one of the D-glucopyranosyl units by 2-aminoethylenamino or 2-hydroxyethylenamino and γ-cyclodextrin which is substituted in the 6-position of one of the D-glucopyranosyl units by 2-aminoethylenamino.

## (9) Evidence Appendix

No evidence is submitted for consideration.

**(10) Related Proceedings Appendix**

To the knowledge of the undersigned, there are no related appeals or interferences, and thus, no related court or Board decisions.